

Appl. No. 10/796,820  
Amdt. Dated 1/31/2007  
Response to Office action dated 08/01/2006

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (Canceled).

Claim 2 (Currently amended): The image sensor unit image reading apparatus of claim 4 wherein  
~~the first photoconverter is a color photoconverter~~  
~~the second photoconverter is a monochrome photoconverter~~  
the enhanced color signals comprise first, second, and third digitized enhanced color  
signals, each having the second number of bits.

Claim 3 (Canceled).

Claim 4 (Currently amended): An image reading apparatus ~~including the image sensor unit of claim 3 and further having a color mode, wherein the image sensor outputs color signals and monochrome signals, comprising~~  
an image sensor unit comprising

a first photoconverter comprising a first array of first light receiving elements, the first photoconverter for photoelectrically converting light of a first color from a source image for outputting a first color signal

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a second photoconverter comprising a second array of second light receiving elements, the second photoconverter for photoelectrically converting light of a second color from a source image for outputting a second color signal

a third photoconverter comprising a third array of third light receiving elements, the third photoconverter for photoelectrically converting light of a third color from a source image for outputting a third color signal

a fourth photoconverter comprising a fourth array of fourth light receiving elements, the fourth photoconverter for photoelectrically converting monochromatic light from the source image for outputting a monochrome signal

an A/D converter unit to

convert the first, second, and third color signals into respective first, second, and third digitized color signals each having a first number of bits

convert the monochrome signal to a digitized monochrome signal having a second number of bits greater than the first number of bits

a signal correction unit to

produce enhanced color signals

use the digitized monochrome signal to modify the first, second, and third digitized color signals to produce the enhanced color signals.

Claim 5 (Currently amended): The image reading apparatus of claim 4 wherein the signal correction unit is ~~further~~ for improving the color signals' gradation.

Claim 6 (Currently amended): The image reading apparatus of claim 4 wherein the color signals are signals of three primary colors ~~and the signal correction unit is for converting the three primary color signals and the monochrome signals to data indicating color characteristics.~~

Claim 7-13 (Canceled).

Claim 14 (Currently amended): The process for producing image signals image reading apparatus of claim ~~4~~3 ~~6~~ wherein the first color is red, the second color is green and the third color is blue.

Claim 15 (Currently amended): The process for producing image signals image reading apparatus of claim ~~4~~3 ~~14~~, ~~wherein the signal correction unit is adapted to comprising improving the quality by obtaining a brightness signals from the digitized monochrome image signals obtaining a first color difference signal from the first, second and third digitized color image signals obtaining a second color difference signal from the first, second and third digitized color image signals obtaining enhanced first, second, and third color image signals from the brightness signals and the first and second color difference signals, obtaining enhanced second color image signals from the brightness signals, the first color difference signals and the second color difference signals obtaining enhanced third color image signals from the brightness signals and the second color difference signals.~~

Claim 16-22 (Canceled).

Claim 23 (New): An image reading apparatus comprising

an image sensor unit comprising

a first photoconverter comprising a first array of first light receiving elements, the first photoconverter for photoelectrically converting light of a first color from a source image for outputting a first color signal

a second photoconverter comprising a second array of second light receiving elements, the second photoconverter for photoelectrically converting light of a second color from a source image for outputting a second color signal

a third photoconverter comprising a third array of third light receiving elements, the third photoconverter for photoelectrically converting light of a third color from a source image for outputting a third color signal

a fourth photoconverter comprising a fourth array of fourth light receiving elements, the fourth photoconverter for photoelectrically converting monochromatic light from the source image for outputting a plurality of monochrome signals

an A/D converter unit to

convert the first, second, and third color signals into respective first, second, and third digitized color signals each having a first number of bits

convert the plurality of monochrome signals to digitized monochrome signals each having a second number of bits greater than the first number of bits

a signal correction unit to

produce enhanced color signals

use the plurality of monochrome signals to modify the first, second, and third digitized color signals to produce the enhanced color signals.

Claim 24 (New): The image reading apparatus of claim 23, wherein

the enhanced color signals comprise first, second, and third digitized enhanced color signals, each having the second number of bits.

Claim 25 (New): The image reading apparatus of claim 23, wherein the signal correction unit is for improving the color signals' gradation.

Claim 26 (New): The image reading apparatus of claim 23, wherein the color signals are signals of three primary colors.

Claim 27 (New): The image reading apparatus of claim 26, wherein the first color is red, the second color is green and the third color is blue.

Claim 28 (New): The image reading apparatus of claim 27, wherein the signal correction unit is adapted to

obtain brightness signals from the digitized monochrome signals

obtain a first color difference signal from the first, second and third digitized color signals

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obtain a second color difference signal from the first, second and third digitized color signals

obtain-enhanced first, second, and third color image signals from the brightness signals and the first and second color difference signals.

Claim 29 (New): The image reading apparatus of claim 5 wherein the signal correction unit is further for improving the color signals' resolution.

Claim 30 (New): The image reading apparatus of claim 25 wherein the signal correction unit is further for improving the color signals' resolution.